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Hatsuhiko Harashina

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EXAMINER

KOLLAS, ALEXANDER C

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/576,452

Applicant(s)

HARASHINA, HATSUHIKO

Examiner

ALEXANDER C. KOLLIAS

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7, 9-11 and 19-37 is/are pending in the application.
- 4a) Of the above claim(s) 25-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 9-11 and 19-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. All outstanding objections and rejections, except for those maintained below, are withdrawn in light of applicant's amendment filed on 6/30/2009.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.
3. The new grounds of rejection set forth below are necessitated by applicant's amendment filed on 6/30/2009. In particular, original Claim 1 has been amended to require that the polyacetal compositions comprise specific antioxidants, processing stabilizers, heat stabilizers and formaldehyde emission inhibitors and amounts thereof not previously presented. Thus, the following action is properly made final.
4. Applicant's election of Group I claims 1-24 in the reply filed on 6/30/2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP 5 § 818.03(a)).
5. Claims 25-37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made without traverse in the reply filed on 6/30/2009.

Claim Objections

6. Claims 4 and 7 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

7. Claim 4, which depends from claim 1, recites that the trioxane content is reduced by heat treatment. However Claim 1 already recites a form of heat treatment, i.e., "that the trioxane content is reduced by treatment with an aqueous medium or an alcohol-containing aqueous medium under heating of not lower than 80 degree C". Given that claim 1 recites removal of trioxane by with an aqueous medium under heating of not lower than 80 degrees C, it is not clear how reducing of trioxane content by heat treatment recited in claim 4 further limits the heat treatment process recited in claim 1. Further, given that claim 7 depends from claim 4, in light of the above discussion, this claim fails to further claim 1 as well. Therefore as that the product by process recited limitations in claims 4 and 7 fail to further limit the product by process recited in claim 1 requirements of 35 USC 112,4th paragraph have not been met.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1-3, 9, 19-20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,844,059) in view of Harashina et al (US 2003/0036591 hereafter referred to as US '591) and Harashina (US 2003/0158301 hereafter referred to as US '301).

Regarding claims 1 and 19-20, Yamamoto et al discloses a polyacetal copolymer comprising monomers such as trioxane as the principal monomer and co-monomers such as cyclic ethers or cyclic formals (Column 3, Lines 59-64, and Column 4, Lines 1-15). The amount of the un-reacted monomers in the compositions after polymerization is less than 3 wt % (Column 4, Lines 42-47). The residual monomers are removed by evaporation to control the residual monomers to a given amounts (Column 4, Lines 60-62). The reference discloses that the polyacetal resin is treated via heat melting treatment in the presence of a stabilizer such as hindered phenol anti-oxidants, hindered amine, benzotriazole compounds, and oxides of alkaline metals which may be used singly or in combination such as magnesium salts of higher fatty acid (Column 5, Lines 63-67, and Column 6, Lines 1-35). Although the reference does not explicitly disclose that the higher fatty acids and alkaline earth metal salts are processing and heat stabilizers, given that the reference discloses compounds identical to those utilized in the present invention, it is clear that the disclosed compounds will function as heat and processing stabilizers as presently claimed.

Regarding the amounts of trioxane recited in claim 1, it is recognized that the present claims require the amount of trioxane content in ppm while the reference discloses trioxane content in weight percent, however it is the Examiner's position, absent evidence to the contrary, given the disclosed broad range of 3 wt % or less by Yamamoto, the amount disclosed by the reference meets the presently claimed amount of 100 ppm or less as presently claimed.

Regarding the amount of residual monomers disclosed by the reference, it is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

Yamamoto et al teaches all the claim limitations as set forth above. However, the reference does not explicitly disclose the amounts of hindered phenolic antioxidant, processing stabilizers, and heat stabilizers presently recited in claim 1.

Harashina '591 discloses a polyacetal composition comprising hindered phenol antioxidants in the amount of 0.005 to 3 parts by weight, a processing stabilizer in the amount from 0.05 to 3 parts by weight, and heat stabilizer in the amount from 0.001 to 5 parts by weight (Page 2, [0018], Page 5, [0040], Page 5, [0050], Page 6, [0063], Page 7, [0065], and Page 8, [0093]). It is noted that the amounts of antioxidants, processing stabilizers, and heat stabilizers disclosed by the reference are with the amounts presently recited in claim 1.

Regarding the amounts of the stabilizers disclosed by Harashina '591, it is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re*

Woodruff, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); In re Malagari, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

The combined disclosures of Yamamoto and Harashina '591 teach all the claim limitations as set forth above. However, the references do not disclose that the composition comprises 0.001 to 20 parts by weight of a formaldehyde emission inhibitor.

Harashina discloses '301 discloses formaldehyde emission inhibitor compounds such as glyoxyldiureide compounds which comprise 0.01 to 10 parts by weight per 100 parts by weight polyacetal resin. The reference discloses that if the amount is less than 0.01 parts by weight, it is difficult to suppress formaldehyde emission, while amounts greater than 10 parts by weight adversely affect moldability and color tone of final products (Page 3, [0026]).

Given that both Yamamoto and Harashina '301 are drawn to polyoxymethylene resins, in light of the particular advantages provided by the use and control of the glyoxyldiureide compounds and basic nitrogen compounds as taught by Harashina '301, it would therefore have been obvious to one of ordinary skill in the art to include such compounds in the composition disclosed by Yamamoto in order to improve polyacetal resin processes stability and formaldehyde emission.

Although Yamamoto does not disclose that the trioxane content is reduced by treatment with an aqueous medium or an alcohol-containing aqueous medium under heat of no lower than 80 degrees C, it is noted that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is

unpatentable even though the prior product was made by a different process”, *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) . Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product”, *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). See MPEP 2113.

Therefore, absent evidence of criticality regarding the presently claimed process and given that the reference meets the requirements of the claimed composition, the reference clearly meet the requirements of present claims.

Regarding claims 2-3, the combined disclosures of Yamamoto, Harashina‘591, and Harashina ‘301 and teach all the claim limitations as set forth above. Regarding the trioxane content recited in claims 2-3, it is recognized that the present claims require the amount of trioxane content in ppm while the reference discloses trioxane content in weight percent, however it is the Examiner's position, absent evidence to the contrary, given the disclosed broad range of 3 wt % or less by Yamamoto, the amount disclosed by the reference meets the presently claimed amount of 100 ppm or less as presently claimed.

Regarding the amount of residual monomers disclosed by the reference, it is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re*

Woodruff, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

Regarding claim 9, the combined disclosures of Yamamoto Harashina'591, and Harashina '301 teach all the claim limitations as set forth above.. Although Yamamoto does not disclose the polyacetal resin is the polyacetal copolymer in which the trioxane constant is reduced by a treatment with a basic aqueous medium under heating of not lower than 80 degrees C. it is noted that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process", *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) . Further, "although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product", *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). See MPEP 2113.

Therefore, absent evidence of criticality regarding the presently claimed process and given that the reference meets the requirements of the claimed composition, the reference clearly meet the requirements of present claims.

Regarding claim 24, the combined disclosures of Yamamoto, Harashina '591, and Harashina '301 teach all the claim limitations as set forth above. However, Yamamoto does not disclose a pellet of polyacetal resin comprising a formaldehyde emission inhibitor.

Harashina '301 discloses a polyacetal resin in the form of a pellet which formaldehyde emission inhibitor compounds such as glyoxyldiureide and basic nitrogen compounds which not only inhibit formaldehyde emission but also provide a polyacetal resin with improved process stability (Page 2, [0013]-[0016], Page 3, [0026], Page 5, [0054]).

Given that both Yamamoto and Harashina '301 are drawn to polyoxymethylene resins comprises stabilizers, in light of the particular advantages provided by the use and control of the glyoxyldiureide compounds and basic nitrogen compounds as taught by Harashina, it would therefore have been obvious to one of ordinary skill in the art to include such compounds in the composition disclosed by Yamamoto in order to improve polyacetal resin processes stability and inhibit formaldehyde emission.

10. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,844,059), Harashina et al (US 2003/0036591 hereafter referred to as US '591), and Harashina (US 2003/0158301 hereafter referred to as US '301) as applied to claims 1-3, 9, 19-20, and 24 above, and in view of *The Merck Index* (see attached pages of Previous Office Action).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 9 above is incorporated here by reference.

Regarding the claim 4, the combined disclosures of Yamamoto, Harashina '591, and Harashina '301 teach all the claim limitations as set forth above. Regarding the heat treatment recited in claim 4, Yamamoto et al discloses that the polymer is heat melted in the temperature range from the melting point of the polymer up to 250 degrees C (Column 6, Lines 24-35). Although the reference does not explicitly disclose that the trioxane content is reduced during heat-melting, it is the Examiner's position that the disclosed temperature range and process of heat-melting the polymer meet the presently claimed limitations drawn to reducing trioxane content reduced via heat treatment recited in claims 4-5. Evidence to support this position is found in the *Merck Index* which discloses that the boiling point of trioxane is 114.5 degrees (Page 9860, entry 9863). Given that the reference discloses that heat treatment of the copolymer occurs at a temperature range from the melting point of the polymer to 250 degrees C, it is clear that residual trioxane monomers will be removed.

Regarding claim 7, the combined disclosures of Yamamoto, Harashina '591, Harashina '301 and teach all the claim limitations as set forth above. Although Yamamoto does not disclose that the *The Merck Index* teach all the claim limitations as set forth above. Although Yamamoto does not disclose that the heat treatment include at least one heat treatment selected from the group consisting of an air flow treatment, an inactive gas flow heat treatment, a heated vapor treatment, and a vacuum heat treatment, it is noted that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art,

the claim is unpatentable even though the prior product was made by a different process”, *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) . Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product”, *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). See MPEP 2113.

Therefore, absent evidence of criticality regarding the presently claimed process and given that the reference meets the requirements of the claimed composition, the reference clearly meet the requirements of present claims.

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,844,059), Harashina et al (US 2003/0036591 hereafter referred to as US ‘591), and Harashina (US 2003/0158301 hereafter referred to as US ‘301) as applied to claims 1-3, 9, 19-20, and 24 above, and in view of Okawa et al (US 6,365,704) and Morishita et al (US 5,288,840).

The discussion with respect to Yamamoto, Harashina ‘591 and Harashina ‘301 as set forth in Paragraph 9 above is incorporated here by reference.

Regarding claim 10, the combined disclosures of Yamamoto, Harashina ‘591, and Harashina ‘301 teach all the claim limitations as set forth above. However, the references do not disclose that the polyacetal resin composition comprises a polyacetal copolymer having terminal hemiformal group of not more than 1.2 mmol/kg.

Okawa et al discloses a polyacetal copolymer comprising trioxane and cyclic ether monomers as well as additives (Column 1, Lines 57-67, Column 2, Lines 46-67, Column 5, Lines 37-43) and a hemiformal terminal groups in the amount from 0 to 4 mmol/kg (Page 5, Lines 26-36). The reference discloses that when the amount is greater than 4 mmol/kg, problems such as foaming upon molding cause the decomposition of the polymer (Column 5, Lines 25-37). It is noted that the present claim recites "not more than 1.2 mmol/kg" which includes an amount of zero. Given that the reference discloses from 0 to 4 mmol/kg, the disclosed amount meets the limitations recited in the present claim.

Given that both Yamamoto et al and Okawa are drawn to polyacetal compositions comprising in light of the particular advantages provided by the use and control of the hemiformal terminal groups as taught by Okawa, it would therefore have been obvious to one of ordinary skill in the art to adjust the amount of hemiformal terminal end groups in the compositions disclosed by Yamamoto in order to reduce foaming of the polyacetal polymer upon molding.

The combined disclosures of Yamamoto Harashina '591, Harashina '301 and Okawa teach all the claim limitations as set forth above discloses all the claim limitations as set forth above. However, the references do not disclose that the polyacetal copolymer has terminal formyl group of not more than 1.2 mmol/kg. It is noted that in the present invention, the terminal formyl group (HCO-) may be determined by measurement of a terminal formyloxy or formate (HCOO-) group.

Morishita et al discloses a polyacetal copolymer wherein the ratio of terminal formate to methylene groups as measured by infrared spectroscopy is less than 0.020. When the ratio is

greater than 0.020 the stability of the heat and hot water resistance of the copolymer are deteriorated (Column 4, Lines 8-25).

Given that Yamamoto and Morishita are drawn to polyacetal compositions and given that the , in light of the particular advantages provided by the use and control of the terminal formyl groups disclosed by Morishita, it would therefore have been obvious to one of ordinary skill in the art to modify the amount of terminal formyl groups in the composition disclosed by Yamamoto et al in order to control heat and water resistance of the polyacetal resin.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,844,059), Harashina et al (US 2003/0036591 hereafter referred to as US '591) and Harashina (US 2003/0158301 hereafter referred to as US '301), as applied to claims 1-3,9, 19-20, and 24 above, and in view of Fleischer et al (US 5,587,449) and Tanimura et al (US 2001/0007006).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 9 above is incorporated here by reference.

Regarding claim 11, the combined disclosures of Yamamoto Harashina '591, Harashina '301 teach all the claim limitations as set forth above. However, the references do not disclose that the copolymer has 0.5 or less of unstable terminal groups.

Fleischer et al discloses a polyacetal resin wherein the unstable chain end a degraded down to 0.01 to 1 % in the presence of residual monomers, with residual monomers and impurities in the resin are remove by extraction (Abstract, Column 1, Lines 54-67). While

Tanimura discloses that in order to prevent lowering of the molecular weight and formation of the unstable terminal group during the polymerization, it is necessary to make concentrations of impurities containing active hydrogen such as water, methyl alcohol, formic acid, etc. in trioxane or co-monomers as low as possible (Page 5, [0075]).

It is recognized that the present claims require the amount of unstable terminal ends in wt % and the reference discloses the percentage of unstable end, however it is the Examiner's position, absent evidence to the contrary, given the disclosed broad range of 0.01 to 1 % disclosed by Fleischer et al, that the amount disclosed by the reference meets the presently claimed amount of less than 0.5 wt %.

Given that Yamamoto discloses a polyacetal resin, given that Fleischer et al discloses a polyacetal resin composition comprising 0.01 to 1 % unstable terminal ends and removal of impurities and Tanimura discloses that removal of impurities during polymerization controls the molecular weight and the amount of unstable terminal end, it would have been obvious to one of ordinary skill in the art, to control the polymerization of the polyacetal resin disclosed by Yamamoto in order to reduce the amount of unstable terminal ends and control the molecular weight of the polyacetal resin.

13. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,844,059), Harashina et al (US 2003/0036591 hereafter referred to as US '591) and Harashina (US 2003/0158301 hereafter referred to as US '301) as applied to claims 1-3, 9, 19-20, and 24 above and further in view of Kim et al (US 2001/0049415).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 9 above is incorporated here by reference.

Regarding claim 21, the combined disclosures of Yamamoto Harashina '591, Harashina '301 teach all the claim limitations as set forth above. However, the references do not disclose a polyacetal composition comprising an impact resistance improver.

Kim et al discloses a polyacetal resin composition, additives such as antioxidants, light stabilizers (Page 3 [0052]), thermoplastic polyester and thermoplastic polyurethane (Page 1, [0015]-[0016], Page 2 [0017]-[0018], [0029]-[0030], and [0038]-[0039]). The reference discloses that compositions comprising polyoxymethylene, thermoplastic polyester, and thermoplastic polyurethane have improved processibility, thermal stability, impact resistance and tensile elongation (Page 1, [0013]).

Given that both Yamamoto et al and Kim et al are drawn to polyacetal resins containing additives such as stabilizers, in light of the particular advantages provided by the use and control of the thermoplastic polyurethane and polyester as taught by Kim et al, it would therefore have been obvious to one of ordinary skill in the art to include such polymers in the composition disclosed by Yamamoto et al in order to obtain a polyoxymethylene resin composition which has improved impact resistance and tensile elongation.

14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,844,059), Harashina et al (US 2003/0036591 hereafter referred to as US '591) and

Harashina (US 2003/0158301 hereafter referred to as US '301) as applied to claims 1-3, 9, 19-20, and 24 above, and in view of Katsumata (US 5,190,828).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 9 above is incorporated here by reference.

Regarding claim 22, the combined disclosures of Yamamoto, Harashina '591, and Harashina '301 teach all the claim limitations as set forth above. However, the references do not disclose polyacetal composition comprising a gloss control agent.

Katsumata et al discloses a polyacetal resin compositions comprising an acrylic modified silicone resin and weather light stabilizers (Abstract, Column 2, Lines 35-55, Column 6, Lines 8-29). The reference discloses that the combination of polyacetal resin and the acrylic resin exhibits lower surface gloss and a high-grade appearance (Column 4, Lines 48-55).

Given that both Yamamoto et al and Katsumata et al are drawn to polyacetal resins containing additives such as stabilizers, in light of the particular advantages provided by the use and control of the acrylic resins as taught by Katsumata et al, it would therefore have been obvious to one of ordinary skill in the art to include such polymers in the composition disclosed by Yamamoto et al in order to obtain a polyoxymethylene resin composition which has uniformly reduced surface gloss.

15. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,844,059), Harashina et al (US 2003/0036591 hereafter referred to as US '591) and

Harashina (US 2003/0158301 hereafter referred to as US '301) as applied to claims 1-3, 9, 19-20, and 24 above, and in view of Tajima (US 5,854,324).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 9 above is incorporated here by reference.

Regarding claim 23, the combined disclosures of Yamamoto, Harashina '591, and Harashina '301 teach all the claim limitations as set forth above. However, the references do not disclose a polyacetal composition comprising an agent for improving the sliding property of the composition.

Tajima et al discloses a polyacetal resin compositions comprising stabilizers and a modified olefinic polymer (Column 1, Lines 50-67 and Column 8, Lines 25-29). The reference discloses that the combination of polyacetal resin and the olefinic polymers results in resin compositions which have excellent general properties and sliding performances (Column 1, Lines 50-56).

Given that both Yamamoto et al and Tajima et al are drawn to polyacetal resins containing additives such as stabilizers, in light of the particular advantages provided by the use and control of the olefinic polymer as taught by Tajima et al, it would therefore have been obvious to one of ordinary skill in the art to include such polymers in the composition disclosed by Yamamoto et al in order to obtain a polyoxymethylene resin composition which has improved material and sliding properties.

16. Claims 1-3, 6, 9, 19-20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,886,139) in view of Harashina et al (US 2003/0036591 hereafter referred to as US '591), Harashina (US 2003/0158301 hereafter referred to as US '301) and *The Merck Index* (see attached pages of previous Office Action).

Regarding claims 1-3, 6, 9, 19-20, and 24, Yamamoto et al discloses a polyacetal copolymer comprising monomers such as trioxane as the principal monomer and co-monomers such as cyclic ethers or cyclic formals (Column 5, Lines 26-60). The amount of the un-reacted monomers in the composition after polymerization is less than 3 wt % (Column 7, Lines 25-33). The residual monomers are removed by evaporation to control the residual monomers to a given amounts (Column 7, Lines 45-67 and Column 8, Lines 1-29).

The reference discloses that the polyacetal resin is treated via heat melting treatment in the presence of a stabilizer such as hindered phenol anti-oxidants, hindered amine, benzotriazole compounds, oxides of alkaline metals, and higher fatty acid salts and oxides of alkaline earth metals which may be used singly or in combination (Column 10, Lines 48-67 and Column 11, Lines 1-15). The heat treatment is carried out in the temperature range from the melting point of the polymer up to 250 degrees C (Column 11, Lines 20-31). Although the reference does not explicitly disclose that the higher fatty acids and alkaline earth metal salts are processing and heat stabilizers, given that the reference discloses compounds identical to those utilized in the present invention, it is clear that the disclosed compounds will function as heat and processing stabilizers as presently claimed.

Furthermore, the reference discloses a method of deactivating the catalyst used in the preparation of the polymer comprising a solvent such as water or organic solvents such as

methanol and ethanol, ketones, such as acetone, or aqueous solutions of the above organic solvents (Column 10, Lines 1-14). The reference discloses that the inactivating treatment is from 20 to 120 degrees C and comprises mixing the solvent mixture with the crude polymer (Column 10, Lines 32-33). The reference discloses that a basic nitrogen compound such as ammonia is used as an inactivation agents are used to inactivate the catalyst (Column 9, Lines 15-20, and Lines 33-67). It is the examiner's position that the solvents disclosed by the reference meet the limitations drawn to a good solvent for trioxane and a poor solvent from the resin as recited in the present claims given that the reference discloses solvents identical to those utilized in the present invention.

Although the reference does not explicitly disclose that the trioxane content is reduced during the catalyst inactivation process, it is the Examiner's position that the disclosed temperature range and process of catalyst inactivation meets the presently claimed limitations drawn to reducing trioxane content reduced via solvent treatment recited in claims 1 and 9. Evidence to support this position is found in the *Merck Index* which discloses that trioxane is soluble in water, alcohols, ketones, and alcohols (Page 9860, entry 9863). Given that the reference discloses that solvent treatment of the polyacetal copolymer, it is clear that residual trioxane monomers will be removed.

Yamamoto et al teaches all the claim limitations as set forth above. However, Yamamoto et al does not disclose a composition comprising a formaldehyde emission inhibitor.

Harashina '301 discloses a polyacetal resin composition comprising a glyoxyldiureide compounds, metal salts of glyoxyldiureide and basic nitrogen compounds such as melamine, melamine resin, polyamines or low molecular compounds such as hydrazine, urea compounds,

guanidine compounds, and polycarboxylic acid hydrazine compounds (Page 2, [0014], Page 2 [0026]-[0028]). The reference discloses that the glyoxyldiureide compounds along or in combination with the basic nitrogen compounds discussed above results improvement in the process stability of the polyacetal resin and suppression of formaldehyde emission (Page 2, [0022]). The reference discloses that the above compounds may comprise 0.01 to 10 parts by weight per 100 parts by weight polyacetal resin. The reference discloses that if the amount is less than 0.01 parts by weight, it is difficult to suppress formaldehyde emission, while amounts greater than 10 parts by weight adversely affect moldability and color tone of final products (Page 3, [0026]).

Given that both Yamamoto et al and Harashina '301 are drawn to polyoxymethylene resins, given that Yamamoto et al does not explicitly prohibit other ingredients, in light of the particular advantages provided by the use and control of the glyoxyldiureide compounds and basic nitrogen compounds as taught by Harashina '301, it would therefore have been obvious to one of ordinary skill in the art to include such compounds in the composition disclosed by Yamamoto et al in order to improve polyacetal resin processes stability and formaldehyde emission.

Yamamoto teaches all the claim limitations as set forth above. However, the reference does not disclose the amount of hindered phenols, heat stabilizers and processing stabilizer utilized in the polyacetal composition.

Harashina (US '591) discloses a polyacetal composition comprising hindered phenol anti-oxidants in the amount of 0.005 to 3 parts by weight, a processing stabilizer in the amount from 0.05 to 3 parts by weight, and heat stabilizer in the amount from 0.001 to 5 parts by weight (Page

2, [0018], Page 5, [0040], Page 5, [0050], Page 6, [0063], Page 7, [0065], and Page 8, [0093]). It is noted that the amounts of antioxidants, processing stabilizers, and heat stabilizers disclosed by the reference are with the amounts presently recited in claim 18.

Regarding the amounts of the stabilizers disclosed by Harashina (US '591), it is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

It is recognized that the present claims require the amount of trioxane content in ppm while the Yamamoto discloses trioxane content in weight percent, it is the Examiner's position, absent evidence to the contrary, given the disclosed broad range of 3 wt % of less by Yamamoto, the amount disclosed by the reference meets the presently claimed amount of 100 ppm or less.

Regarding the amount of residual monomers disclosed by the Yamamoto, it is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)

Regarding claims 2-3, the combined disclosures of Yamamoto, Harashina '591, Harashina '301 and *The Merck Index* teach all the claim limitations as set forth above. Regarding the trioxane content recited in claims 2-3, it is recognized that the present claims require the amount of trioxane content in ppm while the reference discloses trioxane content in weight percent, however it is the Examiner's position, absent evidence to the contrary, given the disclosed broad range of 3 wt % or less by Yamamoto, the amount disclosed by the reference meets the presently claimed amount of 100 ppm or less as presently claimed.

Regarding the amount of residual monomers disclosed by the reference, it is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

Regarding claim 4, the combined disclosures of Yamamoto, Harashina '591, and Harashina '301 and *The Merck Index* teach all the claim limitations as set forth above. Although the Yamamoto does not explicitly disclose that the trioxane content is reduced during heat-melting, it is the Examiner's position that the disclosed temperature range and process of heat-melting the polymer meet the presently claimed limitations drawn to reducing trioxane content reduced via heat treatment recited in claim 4. Evidence to support this position is found in the *Merck Index* which discloses that the boiling point of trioxane is 114.5 degrees C (Page 9860,

entry 9863). Given that the reference discloses that heat treatment of the copolymer occurs at a temperature range from the melting point of the polymer to 250 degrees C, it is clear that residual trioxane monomers will be removed.

Regarding claim 7, the combined disclosures of Yamamoto, Harashina '591, Harashina '301, and *The Merck Index* teach all the claim limitations as set forth above. Although Yamamoto does not disclose that the teach all the claim limitations as set forth above. Although Yamamoto does not disclose that the heat treatment include at least one heat treatment selected from the group consisting of an air flow treatment, an inactive gas flow heat treatment, a heated vapor treatment, and a vacuum heat treatment, it is noted that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process", *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) . Further, "although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product", *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). See MPEP 2113.

Therefore, absent evidence of criticality regarding the presently claimed process and given that the reference meets the requirements of the claimed composition, the reference clearly meet the requirements of present claims.

Regarding claim 24, the combined disclosures of Yamamoto, Harashina '591, Harashina '301, and *The Merck Index* teach all the claim limitations as set forth above. However, Yamamoto does not disclose a pellet of polyacetal resin comprising a formaldehyde emission inhibitor.

Harashina '301 discloses a polyacetal resin in the form of a pellet which formaldehyde emission inhibitor compounds such as glyoxyldiureide compounds and basic nitrogen compounds which not only inhibit formaldehyde emission but also provides a polyacetal resin with improved process stability (Page 2, [0013]-[0016], Page 3, [0026], Page 5, [0054]).

Given that both Yamamoto and Harashina '301 are drawn to polyoxymethylene resins comprises stabilizers, in light of the particular advantages provided by the use and control of the glyoxyldiureide compounds and basic nitrogen compounds as taught by Harashina '301, it would therefore have been obvious to one of ordinary skill in the art to include such compounds in the composition disclosed by Yamamoto in order to improve polyacetal resin processes stability and inhibit formaldehyde emission.

17. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,886,139), Harashina et al (US 2003/0036591 hereafter referred to as US '591), Harashina (US 2003/0158301 hereafter referred to as US '301), and *The Merck Index* (see attached pages of previous Office Action) as applied to claims 1-3, 6, 9, 19-20, and 24 above, and in view of Okawa et al (US 6,365,704) and Morishita et al (US 5,288,840).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 16 above is incorporated here by reference.

Regarding claim 10, the combined disclosures of Yamamoto, Harashina '591, Harashina '301 and *The Merck Index* teaches all the claim limitations as set forth above. However, the references do not disclose that the polyacetal resin composition comprises a polyacetal copolymer having terminal hemiformal group of not more than 1.2 mmol/kg.

Okawa et al discloses a polyacetal copolymer comprising trioxane and cyclic ether monomers as well as additives (Column 1, Lines 57-67, Column 2, Lines 46-67, Column 5, Lines 37-43) and a hemiformal terminal groups in the amount from 0 to 4 mmol/kg (Page 5, Lines 26-36). The reference discloses that when the amount is greater than 4 mmol/kg, problems such as foaming upon molding cause the decomposition of the polymer (Column 5, Lines 25-37). It is noted that the present claim recites "not more than 1.2 mmol/kg" which includes an amount of zero. Given that the reference discloses from 0 to 4 mmol/kg, the disclosed amount meets the limitations recited in the present claim.

Given that both Yamamoto et al and Okawa are drawn to polyacetal compositions comprising in light of the particular advantages provided by the use and control of the hemiformal terminal groups as taught by Okawa, it would therefore have been obvious to one of ordinary skill in the art to adjust the amount of hemiformal terminal end groups in the compositions disclosed by Yamamoto in order to reduce foaming of the polyacetal polymer upon molding.

Yamamoto discloses all the claim limitations as set forth above. However, the reference does not disclose that the polyacetal copolymer has terminal formyl group of not more than 1.2

mmol/kg. It is noted that in the present invention, the terminal formyl group (HCO-) may be determined by measurement of a terminal formyloxy or formate (HCOO-) group.

Morishita et al discloses a polyacetal copolymer wherein the ratio of terminal formate to methylene groups as measured by infrared spectroscopy is less than 0.020. When the ratio is greater than 0.020 the stability of the heat and hot water resistance of the copolymer are deteriorated (Column 4, Lines 8-25).

Given that Yamamoto and Morishita are drawn to polyacetal compositions and given that the , in light of the particular advantages provided by the use and control of the terminal formyl groups disclosed by Morishita, it would therefore have been obvious to one of ordinary skill in the art to modify the amount of terminal formyl groups in the composition disclosed by Yamamoto et al in order to control heat and water resistance of the polyacetal resin.

18. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,886,139), Harashina et al (US 2003/0036591 hereafter referred to as US '591), Harashina (US 2003/0158301 hereafter referred to as US '301), and *The Merck Index* (see attached pages of previous Office Action) as applied to claims 1-3, 6, 9, 19-20, and 24 above, and in view of Fleischer et al (US 5,587,449) and Tanimura et al (US 2001/0007006).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 16 above is incorporated here by reference.

Regarding claim 11, the combined disclosures of Yamamoto, Harashina '591, Harashina '301, and *The Merck Index* teaches all the claim limitations as set forth above. However, the references do not disclose that the copolymer has 0.5 or less of unstable terminal groups.

Fleischer et al discloses a polyacetal resin wherein the unstable chain end a degraded down to 0.01 to 1 % in the presence of residual monomers, with residual monomers and impurities in the resin are remove by extraction (Abstract, Column 1, Lines 54-67). While Tanimura discloses that in order to prevent lowering of the molecular weight and formation of the unstable terminal group during the polymerization, it is necessary to make concentrations of impurities containing active hydrogen such as water, methyl alcohol, formic acid, etc. in trioxane or co-monomers as low as possible (Page 5, [0075]).

It is recognized that the present claims require the amount of unstable terminal ends in wt % and the reference discloses the percentage of unstable end, however it is the Examiner's position, absent evidence to the contrary, given the disclosed broad range of 0.01 to 1 % disclosed by Fleischer et al, that the amount disclosed by the reference meets the presently claimed amount of less than 0.5 wt %.

Given that Yamamoto discloses a polyacetal resin, given that Fleischer et al discloses a polyacetal resin composition comprising 0.01 to 1 % unstable terminal ends and removal of impurities and Tanimura discloses that removal of impurities during polymerization controls the molecular weight and the amount of unstable terminal end, it would have been obvious to one of ordinary skill in the art, to control the polymerization of the polyacetal resin disclosed by Yamamoto in order to reduce the amount of unstable terminal ends and control the molecular weight of the polyacetal resin.

19. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,886,139), Harashina et al (US 2003/0036591 hereafter referred to as US '591), Harashina

(US 2003/0158301 hereafter referred to as US '301), and *The Merck Index* (see attached pages of previous Office Action) as applied to claims 1-3, 6, 9, 19-20, and 24above, and in view of Kim et al (US 2001/0049415).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 16 above is incorporated here by reference.

Regarding claim 21, the combined disclosures of Yamamoto, Harashina '591, Harashina '301, and *The Merck Index* teach all the claim limitations as set forth above. However, the references do not disclose that the polyacetal composition comprising an impact resistance improver

Kim et al discloses a polyacetal resin composition, additives such as antioxidants, light stabilizers (Page 3 [0052]), thermoplastic polyester and thermoplastic polyurethane (Page 1, [0015]-[0016], Page 2 [0017]-[0018], [0029]-[0030], and [0038]-[0039]). The reference discloses that the composition comprising polyoxymethylene, thermoplastic polyester and thermoplastic polyurethane have improved processibility, thermal stability, impact resistance, and tensile elongation (Page 1, [0013]).

Given that both Yamamoto et al and Kim et al are drawn to polyacetal resins containing additives such as stabilizers, in light of the particular advantages provided by the use and control of the thermoplastic polyurethane and polyester as taught by Kim et al, it would therefore have been obvious to one of ordinary skill in the art to include such polymers in the composition disclosed by Yamamoto et al in order to obtain a polyoxymethylene resin composition which has improved impact resistance and tensile elongation.

20. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,886,139), Harashina et al (US 2003/0036591 hereafter referred to as US '591), Harashina (US 2003/0158301 hereafter referred to as US '301), and *The Merck Index* (see attached pages of previous Office Action) as applied to claims 1-3, 6, 9, 19-20, and 24 above, and in view of Katsumata (US 5,190,828).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 16 above is incorporated here by reference.

Regarding claim 22, Yamamoto, Harashina '591, Harashina '301, and *The Merck Index* teach all the limitations as set forth above. However, the references do not disclose a polyacetal composition comprising a gloss control agent.

Katsumata et al discloses a polyacetal resin compositions comprising an acrylic modified silicone resin and weather light stabilizers (Abstract, Column 2, Lines 35-55, Column 6, Lines 8-29). The reference discloses that the combination of polyacetal resin and the acrylic resin exhibits lower surface gloss and a high-grade appearance (Column 4, Lines 48-55).

Given that both Yamamoto et al and Katsumata et al are drawn to polyacetal resins containing additives such as stabilizers, in light of the particular advantages provided by the use and control of the acrylic resins as taught by Katsumata et al, it would therefore have been obvious to one of ordinary skill in the art to include such polymers in the composition disclosed by Yamamoto et al in order to obtain a polyoxymethylene resin composition which has uniformly reduced surface gloss.

21. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,886,139), Harashina et al (US 2003/0036591 hereafter referred to as US '591), Harashina (US 2003/0158301 hereafter referred to as US '301), and *The Merck Index* (see attached pages of previous Office Action) as applied to claims 1-3, 6, 9, 19-20, and 24 above, and in view of Tajima (US 5,854,324).

The discussion with respect to Yamamoto, Harashina '591 and Harashina '301 as set forth in Paragraph 16 above is incorporated here by reference.

Regarding claim 23, Yamamoto, Harashina '591, Harashina '301, and *The Merck Index* teach all the limitations as set forth above. However, the references do not disclose an agent for improving the sliding property of the composition.

Tajima et al discloses a polyacetal resin compositions comprising a modified olefinic polymer and stabilizers (Column 1, Lines 50-67 and Column 8, Lines 25-29). The reference discloses that the combination of polyacetal resin and the olefinic polymers results in a resin compositions having excellent general properties and sliding performances (Column 1, Lines 50-56).

Given that both Yamamoto et al and Tajima et al are drawn to polyacetal resins containing additives such as stabilizers, in light of the particular advantages provided by the use and control of the olefinic polymer as taught by Tajima et al, it would therefore have been obvious to one of ordinary skill in the art to include such polymers in the composition disclosed

by Yamamoto et al in order to obtain a polyoxymethylene resin composition which has improved material and sliding properties.

Response to Arguments

22. Applicant's arguments filed 6/30/2009 have been fully considered but they are not persuasive.

23. Applicant argues that the references cited in the previous Office Action do not disclose a concrete lower of the trioxane content. However, it is noted that the applied references disclose that un-reacted trioxane content is no more than 3 wt % (Yamamoto '169 and Yamamoto '059) which clearly encompasses an amount of zero which meets the presently claimed limitation recited in the claims of a trioxane content of 100 ppm or less.

Further regarding Applicant's argument that the polyacetal resins and treatment of these resins disclosed by these references would never have a trioxane content of not more than 100 ppm. However, it is noted that "the arguments of counsel cannot take the place of evidence in the record", In re *Schulze*, 346 F.2d 600,602, 145 USPQ 716,718 (CCPA 1965). It is the examiner's position that the arguments provided by the applicant regarding the trioxane content in the polyacetal resins disclosed by the prior art must be supported by a declaration or affidavit. As set forth in MPEP 716.02(g), "the reason for requiring evidence in a declaration or affidavit form is to obtain the assurances that any statements or representations made are correct, as provided by 35 U.S.C. 24 and 18 U.S.C. 1001".

24. Applicant points to the examples in Yamamoto (US '059) and Yamamoto (US

'139) as evidence that the polyacetal resins disclosed in the references contain a trioxane content greater than that presently claimed, i.e. not more than 100 ppm. However, "applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others." In *re* Courtright, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967). Given that the above references disclose an un-reacted monomer content of not more than 2 wt %, which encompasses a content of zero, the Examiner's position remains, absent evidence to the contrary, that the trioxane content in the disclosed polyacetal resin meets the presently claimed limitations drawn to polyacetal resin with a trioxane content of not more than 100 ppm.

25. Applicant argues that the process disclosed in Yamamoto of reducing the trioxane contents to at most 250 ppm and given the high viscosity of the polyacetal resin it is impossible to reduce the trioxane content to a content of not more than 100 ppm. However, it is noted that "the arguments of counsel cannot take the place of evidence in the record", In *re* **Schulze**, 346 F.2d 600, 602, 145 USPQ 716,718 (CCPA 1965). It is the examiner's position that the arguments provided by the applicant regarding the trioxane content in the polyacetal resins disclosed by the prior art must be supported by a declaration or affidavit. As set forth in MPEP 716.02(g), "the reason for requiring evidence in a declaration or affidavit form is to obtain the assurances that any statements or representations made are correct, as provided by 35 U.S.C. 24 and 18 U.S.C. 1001".

26. Applicant's arguments regarding unexpected results for polyacetal resins having a

trioxane content of not more than 100 ppm are not found persuasive for the following reasons: Of the Inventive Examples 1-23 and 26-30, Inventive Example 1 (with a 99 ppm trioxane content) is a proper side by side comparison of Comparative Example 1 (with a 290 ppm trioxane content); Inventive Example 26 (with a 4 ppm trioxane content) is a proper side by side comparison to Comparative Examples 4 (with a 250 ppm trioxane content). However, the inventive examples comprise a trioxane content of either 4 or 99 ppm while the present claims recite a trioxane content of not more than 100 ppm. As set forth in MPEP 71 6.02(d), whether unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support". In other words, the showing of unexpected results must be reviewed to see if the results occurred over the entire claimed range. In re Clemens, 622 F.2d 1029, 1036,206 USPQ 289,296 (CCPA 1980). Applicants have not provided data to show that the unexpected results do in fact occur over the entire claimed range of trioxane content.

It is noted that while the inventive examples comprises amount of processing stabilizers, heat stabilizers, antioxidant, and formaldehyde emission inhibitor, the examples do disclose all the presently claimed processing stabilizers, heat stabilizers, antioxidants, and formaldehyde emission inhibitors and as such are not commensurate in scope with the scope of the present claims.

The present claims require 0.005 to 3 parts by weight of the antioxidant, 0.001 to 20 parts by weight of the formaldehyde emission inhibitor, 0.01 to 5 parts by weight of the processing stabilizer, and 0.001 to 5 parts by weight of the heat stabilizer. As set forth in MPEP 716.02(d), whether unexpected results are the result of unexpectedly improved results or a property not

taught by the prior art, "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support". In other words, the showing of unexpected results must be reviewed to see if the results occurred over the entire claimed range, In re Clemens, 622 F.2d 1029, 1036,206 USPQ 289,296 (CCPA 1980). Applicants have not provided data to show that the unexpected results do in fact occur over the entire claimed range of the claimed stabilizers.

Further, it is noted that the inventive examples are not commensurate in scope with the closest prior art of record which discloses polyacetal resins with an un-reacted monomer content of no more than 2 wt % as well amounts of the above discussed stabilizers which as set forth in the present Action are within the amount presently claimed. Therefore, it is the Examiner's position that the inventive Examples are not commensurate in scope with the closest applied prior art.

27. Regarding the double-patenting rejection of the claims in the instant application over the claims in copending application 111808,124 set forth in Paragraphs 36-37 in the previous Office Action is withdrawn given that applicant's have amended the present claims to recite specific stabilizers, i.e. anti-oxidants, heat stabilizers, etc and amounts thereof now recited in the copending application.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER C. KOLLIAS whose telephone number is (571)-270-3869. The examiner can normally be reached on Monday-Friday, 8:00 AM -5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. C. K./
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796